Earth's Atmosphere and Weather

6-4 The student will demonstrate an understanding of the relationship between Earth's atmospheric properties and processes and its weather and climate. (Earth Science)

6.4.5 Use appropriate instruments and tools to collect weather data (including wind speed and direction, air temperature, humidity, and air pressure).
Taxonomy level: 3.2-C Apply Procedural Knowledge

Previous/Future knowledge: Only the barometer and sling psychrometer are new instruments to the study of weather. The others were introduced and used in 2nd and in 4th grade. (See 2-1.2, 2-3.4, 4-1.2, 4-4.5) This indicator also relates to a scientific inquiry indicator (6-1.1).

It is essential for students to know that in order to understand the conditions in weather systems and be able to make weather forecasts as precise as possible, weather data must be accurately collected.

NOTE TO TEACHER: Students must be able to use (not make) and accurately measure using the following instruments:

Anemometer
- A tool used to measure wind speed in miles per hour.

Wind vane
- A tool used to measure wind direction.
- Sometimes referred to as a wind-weather vane or a wind sock.
- Wind direction is described by the direction from which the wind is blowing.

Thermometer
- A tool used to measure air temperature in degrees Fahrenheit or Celsius.

Sling Psychrometer
- A two-thermometer instrument also referred to as a wet-dry bulb used to measure *relative humidity* (the amount of water vapor in the air).
- Temperatures readings are converted using a relative humidity table.

Barometer
- A tool used to measure air pressure in inches of mercury or millibars (mb).

Rain gauge
- A tool used for measuring the amount of precipitation in inches or centimeters.

It is not essential for students to make any of these instruments; they need to use them to collect weather data accurately. Students do not need to know how to use a hygrometer.

Assessment Guidelines:
The objective of this indicator is to *use* appropriate instruments and tools to collect weather data; therefore, the primary focus of assessment should be to apply a procedure to the tool that would be needed to measure wind speed, wind direction, air temperature, humidity, and air pressure. However, appropriate assessments should also require students to *identify* weather instruments

that measure certain weather conditions; *interpret* the reading on the instrument for accurate data; or *interpret* the scale on weather instruments.